IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Previously Presented) An optical state modulation method comprising:

periodically modulating luminance of an original display image in temporal domain to generate an optical state variation on a recorded image that is obtained by image-capturing of the modulated display image,

said optical state variation being independent of said original display image and without generating a hampering effect when said displayed image is directly watched,

utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation.

2. (Original) The optical state modulation method according to claim 1, wherein,

when said luminance modulation is performed based on a sinusoidal waveform, an amplitude and frequency of said sinusoidal waveform are determined to satisfy a first condition,

said first condition being that an amplitude and frequency of said optical state variation in each frame of said recorded image obtained by an image-capturing apparatus correspond to the value equal or more than a temporal frequency contrast sensitivity of human

vision determined at the luminance of said original display image.

3. (Original) The optical state modulation method according to claim 2, wherein,

in addition to said first condition, the amplitude of said sinusoidal waveform is determined to satisfy a second condition,

said second condition being that the amplitude of said luminance modulation is equal or less than an amplitude that is obtained from said temporal frequency contrast sensitivity of human vision by setting a frequency component thereof to the frequency of said sinusoidal waveform determined in claim 2 for the luminance of said original display image.

4. (Original) The optical state modulation method according to claim 1, wherein,

when said luminance modulation is performed based on a composite waveform, an amplitude and frequency of at least one of sinusoidal wave components composing said composite waveform are determined to satisfy a first condition,

said first condition being that an amplitude and frequency of said optical state variation in each frame of said recorded image obtained by an image-capturing apparatus correspond to the value equal or more than a temporal frequency contrast sensitivity of human vision determined at the luminance of said original display image.

5. (Original) The optical state modulation method according to claim 4, wherein,

in addition to said first condition, the amplitude of said at least one of sinusoidal wave components is determined to satisfy a second condition,

said second condition being that the amplitude of said luminance modulation is equal or less than an amplitude that is obtained from said temporal frequency contrast sensitivity of human vision by setting a frequency component thereof to the frequency of said at least one of sinusoidal wave components determined in claim 4 at the luminance of said original display image.

6. (Original) The optical state modulation method according to claim 1, wherein

said luminance modulation is performed by applying different types of luminance modulation on corresponding spatial positions of said original display image.

7. (Original) The optical state modulation method according to claim 1, wherein

said luminance modulation is performed by applying different types of luminance modulation on corresponding time periods.

8. (Original) The optical state modulation method according to claim 1, wherein

said luminance modulation is performed so as to hold a same display luminance in each frame before and after said luminance modulation, said display luminance being a

luminance perceived by a audience.

9. (Original) The optical state modulation method according to claim 1, wherein

said optical state variation appeared on said recorded image is a variation in color domain.

10. (Previously Presented) An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and

an optical state modulation apparatus acting on a projection light in an projection light path to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

11. (Previously Presented) An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and

an optical state modulation apparatus controlling a light source of said display apparatus to apply a periodic luminance modulation in temporal domain to an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

12. (Previously Presented) An optical state modulation application system comprising:

a projection type display apparatus projecting a display image onto a screen; and

an optical state modulation apparatus controlling an image signal of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

13. (Previously Presented) An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus generating an effect on a display light to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

14. (Previously Presented) An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus controlling a light source of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

15. (Previously Presented) An optical state modulation application system comprising:

a direct view type display apparatus displaying a display image onto a display screen; and

an optical state modulation apparatus controlling an image signal of said display apparatus to apply a periodic luminance modulation in temporal domain on an original display image, wherein

the luminance of said original display image is modulated to generate an optical state variation on a recorded image obtained through image-capturing of the modulated display image,

said optical state variation being independent of said original display image and generating no hampering effect when said modulated display image displayed on said display screen is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

16. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a projection light projected from a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which the modulated projection light is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

17. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a light source of a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which a projection light from the modulated light source is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

18. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to an image signal of a projection type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image displayed on a screen to which a projection light according to the modulated image signal is projected,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

19. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a display light of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image of the modulated display light of said direct view type display apparatus,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

20. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to a light source of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image from the modulated light source of said direct view type display apparatus,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

21. (Previously Presented) An optical state modulation apparatus of a luminance modulation application system, wherein:

a periodic luminance modulation in temporal domain is applied to an image signal of a direct view type display apparatus to generate an optical state variation on a recorded image that is obtained by image-capturing of a displayed image,

said displayed image being an image according to the modulated image signal of said direct view type display apparatus,

said optical state variation being independent of an original display image and generating no hampering effect when said displayed image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

22. (Previously Presented) Apparatus for displaying an image, comprising:

a display unit, and

a modulation unit generating temporal modulation in an original image to be displayed on said display unit, wherein

said luminance modulation causes an optical state variation perceivable by a human vision on a recorded image obtained by image-capturing of the modulated original display image, and

said optical state variation causes no substantial visible effect perceivable by the human vision when said modulated original display image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

23. (Previously Presented) Apparatus for displaying an image, comprising:

means for displaying an image; and

means for generating temporal modulation in an original image to be displayed, wherein

said luminance modulation causes an optical state variation perceivable by a human vision on a recorded image obtained by image-capturing of the modulated original display image, and

said optical state variation causes no substantial visible effect perceivable by the human vision when said modulated original display image is directly watched, and

a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, used in said luminance modulation.

difference between the distorting signal frequency and a recording frame rate is within a viewable range to the human viewer.

It is respectfully submitted that Burstyn fails to teach or suggest the features of claim 1. Specifically, the Office Action states that "Burstyn does not explicitly recite a rotating filter..." (See Office Action page 3).

The Examiner asserts that it would have been obvious to one of ordinary skill in the art for Burstyn to "utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation." Applicants traverse and request that the Examiner provide documentary evidence to support the Examiner's position in accordance with MPEP 2144.03(C). Moreover, Applicants submit that Burstyn does not provide a rotation filter which includes a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation as suggested by the Examiner.

Applicants submit that Burstyn fails to teach or suggest the above-identified features of claim 1. Specifically, Applicants submit that there is no teaching or suggestion of an optical state modulation method utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation, as recited in claim 1.

Applicants submit that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings either in the references themselves or in the general knowledge available to one of ordinary skill in the art; second, there must be a reasonable

expectation of success; third, the prior art reference or references must teach or suggest all the claim limitations. M.P.E.P. § 2143.

Applicants submit that the fact that Burstyn relates to preventing the illegal recording of film and video through a film anti-piracy system by introducing distortion into an illegally copied image while maintaining a high quality image for viewing by a legitimate audience is not sufficient to assert that it would have been obvious for one of ordinary skill in the art to clarify Burstyn to teach utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation, as recited in claim 1. Applicants submit that there is no suggestion or motivation for one skilled in the art to utilize a rotation filter having a rotate-able filter part in luminance modulation.

Therefore the instant invention is not obvious and Applicants respectfully submit that claim 1 is patentable.

Therefore, Applicants submit that independent claim 1 is patentable.

For reasons similar to those described above with regard to independent claim 1, independent claims 10-23 are also believed to be patentable.

Therefore, Applicants submit that independent claims 1 and 10-23 are patentable.

III. DEPENDENT CLAIMS

The other claims in this application are each dependent from the independent claim discussed above and are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

CONCLUSION

In the event the Examiner disagrees with any of statements appearing above with respect to the disclosure in the cited reference, it is respectfully requested that the Examiner specifically indicate those portion or portions of the reference, providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

In view of the foregoing remarks, it is believed that all of the claims in this application are patentable and Applicants respectfully request early passage to issue of the present application.

Respectfully submitted,

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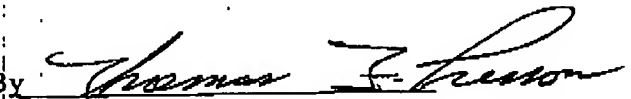
By 
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